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ating 5,000 kilogrammes of water, by these processes seventy-five francs of fuel are consumed, while by my new method the expense does not amount to more than ten francs.

I have shown above, that my process may be employed with advantage in other operations besides that of concentration, such as saltpetre and salt-works: in the first mentioned, there is much water to be evaporated, which has hitherto been effected by slow and very expensive methods, the other is something similar.

GENERAL OBSERVATIONS.

In bringing into use that property which warm air possesses of speedily drying humid substances that are submitted to its action, it is necessary, in order to obtain all the effect possible from such a powerful medium, that fresh warm air should expel from the drying place that which successively loses its dessicating property. For this purpose a number of small holes must be bored in the upper part of the drying place, that the damp air which is to be expelled may oppose no resistance to the fresh warm air that is to supply its place

Another important observation is, that the hygrometrical state of the atmosphere, the greater or less affinity of the water for the substance that it holds in solution, and lastly, the different degrees of concentration to which the liquids are to be brought, are so many causes which concur to render variable the quantity of water that is evaporated in equal spaces of time.

The cloths that are employed to augment the surface of the liquids should be loosely woven, and composed of the coarsest materials.

It is also of consequence, in the preparation of the syrup of grapes, that the cloths be quite clean, and contain no colouring particles, and on that account they should be put through four or five lessives, taking care between each lessive to expose them on the grass for several days. In consequence of this preparation, they cannot communicate any foreign taste to the syrup; they also acquire the property of being uniformly permeable to water, a property on which the success of the operation depends.

In order to regulate the degree of concentration to which any liquid is to be brought, it must be so managed, that the quantity of liquid which runs from the reservoir upon the cloth shall be in such proportion, that when it comes to the lower part of the cloth, it shall have acquired exactly the degree that is desired.

At first sight, one is led to believe, that this part of the operation must be attended with difficulties; but they are soon removed by the augmentation or diminution of the liquid, according to the greater or less degree of concentration to which the syrup or saline solution should be brought.

Account of a Method of making a Cement capable of resisting Wet and Frost; by M. C. de Puymaurin.

(From the Annales des Arts, &c.)

The author observes, with reason, that an invariable rule for making cements cannot be given, because, in that case, it would be necessary, every where to be provided with the same sort of limestone, and sand of the same quality; and that it remains with the person who makes it, to examine the nature of the lime that he employs, and especially the quality of the sand and the siliceous matters that are at his disposal, in order to vary the proportions accordingly. The following is the author's method:

He takes two measures of river gravel, well washed, or fragments of bricks about the size of hazel nuts, two measures of fragments of tiling and the scoria of iron, coarsely pounded, one measure of river sand, well washed, and one of pounded lime, hot from the kiln.

A circle is formed in the sand, into which the lime is thrown and quenched, taking care to beat and mix it well. When the lime is well tempered, it is left in that state for about three hours, that it may all be perfectly quenched. The river gravel, the iron, the tiling and sand are afterwards mixed by degrees; the whole is then well beaten for half an hour, that every fragment of tiling and siliceous stone may be perfectly incorporated.

When the cement is nearly arrived in a state for use, about a bushel of quick lime in powder is thrown upon it; the mortar becomes by that means very difficult to stir, and a quart or two of size is thrown in, which penetrates into and cements all the parts.

This cement may be used with success

as plaster for the interior of apartments, and also with advantage for brick pavements, and is only one third of the price of the cement in common use It is to be spread to the thickness of six or nine lines upon a pavement of bricks roughed by the tool, the gravel is left out, and its place supplied by tiling and scoria of iron, coarsely pounded. It is pressed down, and polished with flat stones.

The author has found this composition succeed perfectly, and he adds, that the proportions which he gives, should be varied according to the greater or less purity of the lime and other materials employed; but to prevent moisture from penetrating through the cement, as well as to preserve it from frost, it is necessary to add a small portion of liquid tar.

He says, it is also necessary that the cement should be coated with the liquid tar in a boiling state; because this resinous body penetrates the pores of the cement, and renders it impermeable to water.

He remedies the inconvenience that results from the pitchy quality and softness of tar during the heat of the summer, by throwing some lime over it, which combines with it, and forms an exterior coat, which resembles the cement of the Romans called *malta*.

A new method of preserving Books, Parchments, and Papers from Damp, and from Vermin and Insects; by M. P. Laforet.

(From the Bibliotheque Phisico Economique.)

The chests and boxes, &c. in which papers are kept should be made of the most resinous and fragrant pine wood. They should be joined by dove-tails without nails, and lined within and without, with good paper washed in an aqueous solution of nitrate of mercury, and fastened to the wood by a glue composed in the following manner:

Some starch, or flour made either from wheat or rye, is tempered, well mixed, and sifted with equal parts of a sort of aqueous solution of muriate of barytes, and heated in a glazed earthen vessel like ordinary glue. Seven or eight cloves of garlic are pounded, according to the quantity of glue that is wanted, and are put into a linen bag and tied fast. The juice is squeezed out and put into the vessel with the bag, the whole being stirred until the end of the operation, which is when the glue is thick enough to draw into threads; it must be cold before it is used. After the paper is glued on to the wood it must be rubbed over from time to time, while drying, with the hand, or a smooth piece of cork, and afterwards the chests must be exposed to a dry and temperate air, in order to dry gradually. The experience of twenty years has proved the good effects of this process. The vermin that nibble or gnaw the wood thus prepared are inevitably killed by the muriate of barytes and nitrate of mercury that are in the glue.

A Remedy for the Canker and other Wounds in Trees.

(From Journal d'Economie Rurale.)

The damaged parts of the tree must be cut or peeled off in the Spring, and the places must be rubbed in a fine sunny day with turpentine, which becomes a sort of varnish, so that the wounds will be hermetically closed, and the tree will speedily recover. By this simple and cheap remedy many trees have been already saved, which in the spring shewed symptoms of decay. Even all the upper part of the bark has been cut away, and in the space of a year an entire cure has been effected.

New Method of employing the Residuum of the Soap-makers; by M. D'Arcet.

(From the Bulletin de Pharmacie.)

When sodas are deprived of all that they contain which is soluble in the cold, there remains in the basins a slate-coloured sediment, which is composed of charcoal, silex, lime, magnesia, iron, sulphate of lime, and about fifteen per cent of sulphur; the dearness of manual labour, and the low price of the substances that compose this residuum, has hitherto prevented manufacturers from decomposing it in order to extract the sulphur.

M D'Arcet has discovered that a part of it may be extracted with advantage by employing it as cement; a piece of ground paved half with this residuum, and half with the common paver's cement, proved